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WILDLIFE REVIEW

AN ABSTRACTING SERVICE FOR WILDLIFE LITERATURE
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Except as indicated, abstracts are by Neil Hotchkiss, editor.

WILDLIFE (GENERAL)--COMMUNITIES

DEXTER, RALPH W. The marine communities of a tidal inlet at Cape Ann, Massachusetts: a study in bioecology. Ecological Monographs 17(3): 261-294, illus. July 1947.

24 intertidal stations in the Annisquam River furnished quantitative data in the summers of 1933-1937. 432 counts made on 400-square-inch quadrats were supplemented by general samplings and observations. Communities studied were as follows: pelagic (Clupea-Syngnathus), subtidal bottom (Laminaria-Cancer), intertidal sediments (Mya-Nereis), intertidal hard surfaces (Balanus-Mytilus-Littorina), and 2 communities of succession to land (low marsh and high marsh). Each had an abundance of organisms. There was an intermingling of communities due to variation in the bottom, and there was succession as a result of sedimentation. The composition and dynamics of the communities changed with each flow and ebb. There were significant differences in the communities from year to year. Charts show food coactions in all but the pelagic community.

DIRKS-EDMUNDS, JANE C. A comparison of biotic communities of the cedar-hemlock and oak-hickory associations. Ecological Monographs 17(3): 235-260, illus. July 1947.

The communities described are located in the Coast Range in Lincoln Co., Oregon and in Piatt Co., Illinois. In Oregon, field studies of vegetation, invertebrates, birds, and mammals were made throughout the summers of 1935-1938, and many times at other seasons over a period of several years. In Illinois, studies were made at intervals of a week to a month from October 1937 to April 1940. The Oregon community had greater precipitation, higher relative humidity, lower mean and less variable temperature, less organic material in the soil, and less light in winter than did the Illinois community. The Oregon community had fewer birds and about half as many insects in summer, fewer leaf-eating beetles and Lepidoptera, and many more spiders than did the Illinois community. Tabulations include food and cover coactions.

HIATT, ROBERT W. Preliminary note on the oceanographic program of the Hawaii Marine Laboratory. Pacific Science 2(1): 67-68, Jan. 1948.

This laboratory will be completed in 1948. It s main activities will be the study of the ecology of the waters around the Hawaiian Islands. The waters inside the reef will be studied in Kaneohe Bay. The transition zone beyond the reef will be studied just outside Kaneohe Bay. Oceanic work will at first be exploratory. The University of California is cooperating in planning and will take part in many of the laboratory's activities.

WILDLIFE (GENERAL)-- EDUCATION

MANN, ROBERTS. Signposts of success. Transactions of the Twelfth North American Wildlife Conference. Pages 124-132. 1947.

".....wildlife men are not taught how to meet the public nor how to translate their knowledge for consumption by the sportsmen and the general public." "We've simply got to get people out-of-doors and open their eyes..... bring them to a realization of the interrelationships and interdependencies of all things in nature;....." The author shows what several agencies and programs are doing, and emphasizes that the greatest need is for good teaching.

WILDLIFE (GENERAL)--FAUNAS & MANUALS

DODGE, NATT N. Poisonous dwellers of the desert. Southwestern Monuments Association, Popular Series No. 3. 44 pages, illus. Southwestern Monuments Association, P. O. Box 1728, Santa Fe, New Mexico. 1947. 50¢

This well-illustrated booklet tells how to identify, and describes the behavior of, centipede, scorpions, black widow spider, tarantula, assassin bug, ants, wasps, hornets, velvet ants, bumblebees, honeybee, coral snake, rattlesnakes, back-fanged snakes, and Gila monster. It also describes the harmless banded gecko, child-of-the-earth, and vinegarone, which some people believe are poisonous. There are detailed descriptions of the best treatments for differnet bites and of ways to avoid bites and control the biter.

WILDLIFE (GENERAL)--FOOD

PEARCE, JOHN. Identifying injury by wildlife to trees and shrubs in northeastern forests. U. S. D. I., Fish and Wildlife Service, Research Report 13. 29 pages, illus. 1947. 15¢ from Government Printing Office.

The author discusses injuries by browsing mammals, rodents, black bears, birds, and wildcats. Photographs and a tabular summary assist in the specific identification of the injuries. There are over 50 references.

WILDLIFE (GENERAL)--MANAGEMENT
(See also WILDLIFE (GENERAL)--STOCKING, Latham)

BENNETT, HUGH H. American wildlife and the land. Transactions of the Twelfth North American Wildlife Conference. Pages 24-33. 1947.

"Conservation of wildlife and conservation of productive land are basically interlocked." Much of the present reduction in numbers of game birds and mammals is probably due, directly or indirectly, to erosion. The author gives several examples of benefits to game through soil conservation practices. He outlines the work of soil conservation districts and emphasizes that it will cost us much more to neglect widespread soil conservation than it will to do it. By the end of 1946, 95 million acres had received complete conservation treatment. Wildlife practices in the Soil Conservation Service comprise marsh management, hedge planting, development of odd corners, treatment of spoil banks, pond building, stream-bank management, and wildlife border planting.

CALLENDER, R. E. Texas extension wildlife program and some results. Transactions of the Twelfth North American Wildlife Conference. Pages 116-124. 1947.

Wildlife extension is one phase of the county agents' program. Landowners are key men; and the cooperative land unit provides the stage for demonstrating the value of game, fur bearers, and fish as a crop. A tabulation of some of the results of the program for 1946 includes such concrete accomplishments as the building of over 6000 ponds; the stocking of nearly as many; the receipt of nearly $700,000 for hunting, fishing, and trapping leases; and the control of a large number of predators. Exploitation of our natural resources has been general for 150 years. Enlightenment and teamwork can conserve them.

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WILDLIFE (GENERAL)--MANAGEMENT--Continued

DURYEA, PERRY B. Conservation gets its biggest break. New York State Conservationist 1(1): 2-3,29. Aug. 1946.
A Postwar Planning Commission and a Postwar Reconstruction Fund are making it possible to go on with construction, increase conservation services, and begin a new program of conservation education in New York State.

FEAST, C. N. Department reorganized. Colorado Conservation Comments 10(5): 13-14. Mar. 1948.
A chart shows the relationships of activities in the Game and Fish Department. The activities are described and some of the workers are listed.

GRAHAM, EDWARD H. A symposium--the ecological approach to land use: the biologist's viewpoint. Journal of Soil and Water Conservation 1(2): 55-58. Oct. 1946.
The author discusses 3 relationships:"..... (1) the relation of insect and bird populations to strip cropping; (2) the relation between range conditions and rodent numbers; and (3) the classification of land according to use capabilities as a guide toward environmental adjustment." Strip cropping in some places is followed by an increase of an injurious insect; in others by an increase in small birds or an increase in predacious insects. The total biological effect has not been measured. Where there is overgrazing, erosion increases and usually the numbers of rodents and jackrabbits increase. The solution to rodent control seems to lie in improving the range rather than in poisoning or other direct control. The Soil Conservation Service recognizes 8 classes of land in farms. 33 million acres are suitable only for wildlife or recreation.

GUMBEL, WALTER G. A power company's stake in wildlife. Transactions of the Twelfth North American Wildlife Conference. Pages 467-472. 1947.

"The power industry has much to gain in supporting a strong wildlife conservation program. Increased farm income, better hunting and fishing, and improved relations between the sportsman and the farmer, are only a few of the more important contributions. In addition, the investment in rural lines and services by the company is made more secure through the application of a sound conservation program of which wildlife is an important part."

KING, MALCOLM E. Maryland's cooperative farm-game program with soil conservation districts. Transactions of the Twelfth North American Wildlife Conference. Pages 491-495. 1947.
"The Maryland Cooperative Farm-Game Program is proving successful because it is not a goal in itself, but a part of an integrated farm resources program; and because it is backed by active soil conservation districts, which have caught the spirit of real conservation-- the desire to improve and increase all resources for the general welfare of all the people in Maryland." Wildlife restoration work is under way in conservation

WILDLIFE (GENERAL)--MANAGEMENT--Continued

districts in all parts of Maryland. The landowner has the main responsibility in carrying it out; and the heart of the program is a refuge to each farm. More than 4000 farmers are cooperating with the soil conservation districts. One of their most important activities is the exclusion of domestic stock from over 24,000 acres of woodland and wildlife areas. Other practices beneficial to wildlife are strip cropping in central and southern Maryland, ditch bank improvement on the Eastern Shore, and the building of farm ponds.

KING, RALPH T. The future of wildlife in forest land use. Transactions of the Twelfth North American Wildlife Conference. Pages 454-467. 1947.

"The intensive and widespread cutting on commercial forest lands during the next 10 to 20 years will affect a large percentage of all forest wildlife habitats in this country. The effect, in general, will be to benefit wildlife. Whether these benefits will be only temporary and slight or permenent and extensive depends upon the degree to which the various phases of land-use planning are coordinated." If wildlife is to be provided for in land-use planning, much reliable information must be obtained on wildlife values; there must be extensive education; and our profession must assume leadership.

LEOPOLD, ALDO. Summarization of the Twelfth North American Wildlife Conference. Transactions of the Twelfth North American Wildlife Conference. Pages 529-536. 1947.

The author points to important subjects that he believes received too little attention at the Conference: (1) the battle to keep the western public lands, (2) determination of production in fur animal populations, (3) destruction of wilderness, (4) techniques of ungulate reductions. He commends the increased understanding by wildlife managers of the interdependence of soil, water, plants, and animals; but deplores our lack of progress in managing the land better. Of the broad subjects considered at the Conference, he believes the greatest progress has been made in the study of waterfowl.

LEWIS, HARRISON F. Wildlife conditions in Canada. Transactions of the Twelfth North American Wildlife Conference. Pages 10-16. 1947.

The author reviews conditions that, over a long period, have been unfavorable or favorable to wildlife. In the last few decades an appreciation of wildlife has grown in strength and wisdom. Reserved areas, water manipulation, and development of systems of registered trap lines have helped to conserve wildlife. There are notes on the relative abundance of many birds and large mammals. Without increased restrictions, duck hunting will soon be a thing of the past.

MACIAS A., LUIS. Wildlife conservation in Mexico is an educational problem. Transactions of the Twelfth North American Wildlife Conference. Pages 6-9. 1947.

Mexico needs adequate laws and personnel to enforce them; management programs and trained biologists to direct them. But, first and foremost, there must be a public understanding of conservation problems and a strong desire to support a conservation program.

WILDLIFE (GENERAL)--MANAGEMENT--Continued

MOSBY, HENRY S. Wildlife studies and training move ahead. Virginia Wildlife 8(12): 9-11, illus. Dec. 1947.

The author outlines the history of the Virginia Cooperative Wildlife Research Unit from 1935 to 1947. 14 of the 18 men who received master's degrees in wildlife conservation from V. P. I. are now in wildlife or other conservation work. Several outstanding publications are listed. The newly organized Cooperative Wildlife Station, which replaces the Research Unit, is carrying on research on the effect of land management on gray squirrel, rabbit, and quail; waterfowl food production at Back Bay; beaver management; and methods of determining deer pressure on areas west of the Blue Ridge.

QUINN, I. T. Wildlife potentialities great in Virginia. Virginia Wildlife 8(11): 14-15,18, illus. Nov. 1947.

About two-thirds of Virginia's land is suitable only for the production of timber and wildlife. Research, stocking, habitat improvement, and education are helping to increase wildlife. The author describes the organization of work under the Commission of Game and Inland Fisheries.

RUHL, HARRY D. Reviewing eight-years operation of a wildlife experiment station. Transactions of the Twelfth North American Wildlife Conference. Pages 496-503. 1947.

The Rose Lake Wildlife Experiment Station was established near Lansing in 1938. Its objective was the development of practical methods for the management of wildlife on agricultural lands in southern Michigan. The area had been poorly farmed, and a new farming program was set up on the central portion. An adjacent portion was reserved for experimenting with special wildlife management practices; while outlying portions were used in developing game-management practices that could be applied to large areas of submarginal land. Inventories of the different game and fur species were begun in 1939 and have been continued. The station has been open to hunting during the legal season. Much has been learned, and some conclusions applicable to local conditions have been arrived at. That there not been more concrete results seems due to difficulties inherent in the job.

SHOW, S. B., and others. Wildlife management handbook for forest officers, Region 5. U. S. D. A., Forest Service. 234 pages, illus. 1947. Limited distribution.

Region 5 comprises California and southwestern Nevada. Much of the handbook's subject matter is organized in outline form. Two main sections deal with game management. In the first, habitat and inherent qualities of species and populations are considered as controls in management; and each is subdivided into factors subject to, or not subject to, control by man. Management methods are then explained in terms of actual problems. They include methods for appraising situations before actual management is undertaken. Several appendices include summaries of requirements and characteristics of important mammals, birds, and fishes; specifications on structures and devices; census methods; material for study; cooperation; and facilities afforded by publications, libraries, and authorities.

WILDLIFE (GENERAL)--MANAGEMENT--Continued

TURNER, DAVID B. Professional opportunities in the fish and wildlife field. Transactions of the Twelfth North American Wildlife Conference. Pages 102- 115. 1947.

The author completed in 1946 a preliminary study of professional opportunities in the fish and wildlife field. It was supported by the Wildlife Management Institute, the American Nature Association, and Cornell University. More than 2000 biologists were questioned. Many conclusions are tabulated under the headings of individual training; training institutions; and employment possibilities in the United States and Canadian governments, States and Provinces, institutions, and in private work. Further studies are recommended.

WILDLIFE (GENERAL)--MORTALITY

ELLIOTT, BOB. Fire--fish and wildlife. Hunting and Fishing 25(2): 48-49, illus. Feb. 1948.

200,000 acres of Maine forest burned in October 1947, but less than one per cent of the State's game covers were destroyed. Most of the damage was in the southernmost county, York. There loss of life among game appeared slight, but the trout were completely killed. Loss of game food was high. A game survey, made in early November, indicated that much of the wildlife moved out ahead of the fires and return afterward to the burned lands.

FITCH, JOHN E., and YOUNG, PARKE H. Use and effect of explosives in California coastal waters. California Fish and Game 34(2): 53-70, illus. Apr. 1948.

Geophysical survey work involves the use of explosives offshore from southern California. A few birds (cormorants and pelicans) and mammals (sea lions) and many fish (56 species listed) have been killed. Jet shots kill many less fish than do open shots. Fish are not driven from an area by underwater explosions; nor are all susceptible fish within lethal range killed or injured.

WILDLIFE (GENERAL)--POPULATIONS

MANNING, T. H. Notes on the country, birds and mammals west of Hudson Bay between Reindeer and Baker Lakes. The Canadian Field-Naturalist 62 (1): 1-28, illus. Jan.-Feb. 1948.

This is a report on a visit made in 1945 to 19 different localities that are scattered north-northeastward for about 500 miles from west of Churchill. There are notes on most of these localities and on 15 kinds of mammals and over 50 birds. Population figures are given at different localities for 21 kinds of birds and for barren ground caribou. There is a list of 20 references.

WILDLIFE (GENERAL)--PROTECTION
(See also WILDLIFE (GENERAL)--MANAGEMENT)

CAHALANE, VICTOR H. Wildlife and the National Park land-use concept. Transactions of the North American Wildlife Conference. Pages 431-436. 1947.

The national parks are the only form of land use in which the entire plant-animal community (except fish) can be legally preserved. For a long time predators were destroyed; but now none is controlled unless to protect a vanishing species. Protection of predators in parks is sometimes opposed on the assumption that they destroy livestock and game in adjacent lands. ".....national park faunas are not managed to provide maximum numbers nor to furnish stable exhibits for the public. Instead, the objective is to maintain the natural ebb and flow of animal life." Many difficult problems arise; overpopulation of ungulates, relation of predators to outside industry, preservation of vegetation, protection of visitors from bears and vice versa, and preservation of wilderness.

DAY, ALBERT M. Wildlife conservation in the postwar world. Transactions of the Twelfth North American Wildlife Conference. Pages 33-40. 1947.

Protecting existing environment and restoring destroyed environment are the most important of the many factors involved in a sound national wildlife conservation program. They all will cost a lot of money. Legislation has been initiated toward making more money available.

HILDEBRAND, MILTON. Wildlife: conserve, manage, or lament? Sierra Club Bulletin 33(3): 11-18. Mar. 1948.

This is a thoughtful summary of many of the elements involved in wildlife conservation. Some species need protection for themselves and their environments if they are to be saved. Managing environments may increase others.

MURIE, OLAUS J., and others. Wilderness and aircraft. The Living Wilderness 12(22): 1-6. Autumn 1947.

This committee report recommends that aircraft be prohibited from landing in wilderness areas except in emergency or for limited administrative purposes. It recommends a ceiling of 2,000 feet for aircraft passing over wilderness areas, and the prohibition of all hunting from aircraft. Increased hunting and fishing due to fast, easy transportation and the direct disturbance of wildlife are among the reasons for these recommendations.

WILDLIFE (GENERAL)--STOCKING

LATHAM, ROGER M. More game farms--or land management? Outdoorsman 90(2): 20, 69-71. Mar.-Apr. 1948.

The author discusses cottontail, pheasant, ruffed grouse, bobwhite, turkey, and whitetailed deer populations. He concludes: ".....if the environment is congenial, the native stock should, without any assistance, be capable of populating the range to its full capacity." Continued large-scale stocking of pen-reared game may have a bad effect on wild game through cross-breeding. Artificial stocking should be restricted to experiments, introduction of non-native species, and attempted reestablished of extirpated native species. Improvement of environment will increase the game.

WILDLIFE (GENERAL)--VALUES

DEUEY, NEWTON B. This wildlife business. Transactions of the Twelfth North American Wildlife Conference. Pages 160-165. 1947.

It is bigger than hunting and fishing. Photographers and observers provide a big share of the business--a share, however, that cannot easily be measured in dollars and cents. The author describes the role of the National Park system in conserving wildlife and in giving opportunities for observing wildlife, providing fishing, and providing surplus game that spreads into surrounding areas. In 1946, through September 30, over 21 million people visited the 160 areas of the National Park system.

SCHOENFELD, CLAY. Our last great hope for hunting and fishing. Hunting and Fishing 25(2): 11-12, 30, illus. Feb. 1948.

Since primitive conditions cannot be restored, we must put natural constructive processes to work, be content with permanently reduced bags and shorter seasons, and learn to get something out of the outdoors except the game and fish we bring home. "We must begin to understand what conservation really is and then teach our sons". "Without this information in our thoughts and acts, all the management in the world won't do the job."

MAMMALS--BEHAVIOR

TAYLOR, WALTER P. Outlines for study of mammalian ecology and life histories. U. S. D. I., Fish and Wildlife Service, Wildlife Leaflet 304. 26 pages, illus. Apr. 1948.

This is a revision of U. S. D. A. Miscellaneous Publication 86, "Outlines for studies of mammalian life histories", issued in 1930. Some of the points emphasized are the importance of studying the whole biotic community as well as the mammalian community; the modern approach in methods and interpretation; and background information on heredity and environment. The author suggests, in detail, studies relating to the influence of environment on mammals and vice versa, life histories, structure and behavior, and the relations between the lower mammals and man. He refers to about 50 publications and reports.

YOUNG, STANLEY P. Sketches of American wildlife. 143 pages, illus. The Monumental Press, Baltimore, 1946. $3.00.

The book contains interesting and informative accounts of coyote, black-footed ferret, musk ox, antelope, history of the use of furs, mamagement of vicuna and guanaco by the Incas, wolf, luring wild cats with catnip oil, prairie dog, puma, etc.

MAMMALS--BIBLIOGRAPHY
(See BIRDS--BIBLIOGRAPHY)

MAMMALS--CONTROL

BEATTY, ROBERT O. Predator control--facts and fancies. Outdoor America 12(11): 6-8, illus. Dec. 1947.

Natural predation helps to balance the great reproductive power of

MAMMALS--CONTROL--Continued

wild things and helps to get rid of the weak. Control is sometimes necessary, but its consequences frequently are more complicated and less desirable than were anticipated.

BRADLEY, BEN O. Nuisance wildlife control. New York State Conservationist 2(4): 6-7, illus. Feb.-Mar. 1948.

A professional trapper is employed in each of the 8 game management districts of the State to take care of personal complaints. Over half of their time is spent in fox control. Deer (mostly in southwestern New York), cottontails, beaver, and squirrels (in cities) are the principal other mammals controlled.

WENTWORTH, EDWARD NORRIS. America's sheep trails: history, personalities. 667 pages, illus. The Iowa State College Press, Ames, Iowa, 1948. $7.00.

A record of the part sheep played in building the United States. Chapter 21 deals with predatory animals. The worst predators are dogs. Timber wolves were destructive in the colonies. Coyotes, now the principal wild enemies of sheep, do more damage than all other wild animals combined. They seem to be able to increase under control programs. Wild predators may take over a million sheep and lambs a year. There are discussions of salaried hunters vs. bounties, poisoning campaigns, and federal control agencies. In chapter 22, on the public lands, a section on game reviews some of the serious problems arising from competition between game and domestic animals. The book has 10 pages of references and a 35-page index.

MAMMALS--FAUNAS &MANUALS

KIRKPATRICK, CHARLES M., and CONAWAY, CLINTON H. Some notes on Indiana mammals. American Midland Naturalist 39(1): 128-136. Jan. 1948.

These notes on 36 species include many new county records, plus observations on life histories, environments, behavior, and food.

MAMMALS--POPULATIONS

WODZICKI, KASIMIERZ. Interim report on wild life problems in New Zealand. Department of Scientific and Industrial Research, Wild Life Section Report No. 1. 3 vols. 244 pages, illus. Wellington. Dec. 1947. Limited distribution.

The author describes the distribution (aided by maps), economic importance, and existing methods of control of opossum, wallaby, rabbit, wild goat, chamois, thar, red and other deer, and wild pig. While a preliminary report, designed "..... to serve as a guide to research into problems relating to New Zealand wild life,.....", it is detailed and draws upon the knowledge of many people, directly and through a large number of publications. North American species discussed are black-tailed deer, moose, Virginia deer, and wapiti. The first did not establish itself; the others are established locally. Virginia deer are widespread on Stewart Island. Wapiti are in competition with red deer, with which they interbreed. The opossum is an Australian species. The report clarifies 3 main problems and suggests ways of studying them. They are the control of noxious mammals and birds, the care of native animals, and the status of game birds.

MAMMALS--BIG GAME(GENERAL)

ANONYMOUS. Big-game inventory of the United States, 1946. U. S. D. I., Fish and Wildlife Service, Wildlife Leaflet 303. 13 pages. Mar. 1948.
Annual inventories were compiled from 1937 to 1941, and in 1943. This is the first since 1943. The data were assembled from the States, the Fish and Wildlife Service refuges, National Forests, National Parks, Indian reservations, and grazing districts. They include 6 members of the deer family, antelope, 2 bighorns, mountain goat, peccary and wild boar, 2 bears, and bison. There are summaries of populations by land ownership and by states in 1946, a comparison of the 1943 and 1946 populations, and a summary of the kill by states in 1946.

ANONYMOUS Foot-and-mouth disease in wildlife. Journal of the American VETERINARY Medical Association 112(854): 337. May 1948.
Experiences with foot-and-mouth disease in deer in California in 1924 and with several wild mammals in South Africa in 1937 and 1944 show that once present in a country's wild mammals, foot-and-mouth disease is permanent and a continuous menace to livestock. "The only remedy is to keep it out."

BOUGHTON, I. B. The hoof and mouth disease. Transactions of the Twelfth North American Wildlife Conference. Pages 520-523. 1947.
Even with hoof and mouth disease no nearer the United States than 300 miles south of the Rio Grande, it is a potential threat all along the border to cattle, sheep, goats, hogs, deer, antelope, and bighorns. Birds may be mechanical carriers. It spreads very rapidly. Two outbreaks in this country have been stopped by complete extermination of the affected animals. Any effort necessary to keep it out of the country is justified.

COWAN, IAN McTAGGART. Range competition between mule deer, bighorn sheep, and elk in Jasper Park, Alberta. Transactions of the Twelfth North American Wildlife Conference. Pages 223-227. 1947.
A study of winter food habits through direct observation was made in December 1944. The ground was bare at the time. Most of the mule deer's food was browse species, with bearberry by far the most important item. Aspen and willow are the two most palatable browse species in the area for both elk and deer. Overbrowsing has made them unavailable; so at the time of the study there was no apparent conflict between elk and deer. The elk fed mostly on grass. Bighorns fed mostly on grasses and sedges. Thus elk actually competed seriously with both sheep and mule deer; while sheep and deer competed very little with each other. Comparison with food studies of elk in Idaho, Montana, Virginia, and Oregon and of deer in Idaho, Montana, and Oregon indicated that both deer and elk in Jasper Park were eating much more grass than is normal.

LEOPOLD, A. STARKER. Status of Mexican big-game herds. Transactions of the Twelfth North American Wildlife Conference. Pages 437-447, illus. 1947.
Mexico's big-game herds are in about the same stage of depletion as were ours early in the 20th century. Of an original 10 species, 8 remain (ranges are shown by maps). Of these 8, antelope, bighorn, and tapir are well on the road to extinction; and the populations of 3 species of deer

MAMMALS--BIG GAME(GENERAL)--Continued

and 2 of peccary are greatly reduced. Overshooting and destruction of habitat are responsible. The greatest wastage of forest, soils, and game range is in the uplands. White-tailed deer are hunted more than any other species and stand this pressure well.

RASMUSSEN, D. I., and DOMAN, EVERETT R. Planning of management programs for western big-game herds. Transactions of the Twelfth North American Wildlife Conference. Pages 204-210. 1947.

In recent years there has been a striking increase in big-game hunters and in some big-game species. Limits are now being reached in big-game populations; therefore there must be increasing efficiency in managing herds and harvesting the annual increase. The objectives of livestock ranching and big game management are similar. [illegible]. The authors give productivity figures for elk herds in Utah and Wyoming and for mule deer herds in Idaho and Utah. They discuss problems of harvesting.

TAYLOR, WALTER P. Some new techniques--hoofed mammals. Transactions of the Twelfth North American Wildlife Conference. Pages 293-320. 1947.

The author summarizes techniques described in periodicals and correspondence and developed in research not yet published upon. He describes censusing of 3 species of deer; aerial surveys of white-tailed deer and antelope; studies of big-game trends; development of white-tailed and mule deer management statistics; carrying capacity studies with white-tailed deer and elk; investigation of feeding habits and food of 3 species of deer; investigation of the relation of soil fertility to wildlife; development of techniques based on ecological analysis for the management of deer, bighorns, antelope, elk, and reindeer; methods of trapping mule deer and bighorns; and miscellaneous studies on movements, age, repellents, disease, etc. About 40 references are listed.

WAGAR, J. V. K. The contest for western public game fields. Transactions of the Twelfth North American Wildlife Conference. Pages 165-174. 1947.

"This is a problem of increasing intensity of overlapping land uses." Much of western wildlife lives on public lands. If much public land passes into private ownership it is doubtful that meat production for the country will be increased; and there is a possibility that the public may demand it back.

MAMMALS--BIG GAME(DEER)

CHATTIN, JOHN E. Breeding season and productivity in the interstate deer herd. California Fish and Game. 34(1): 25-31, illus. Jan. 1948.

This herd summers on the Fremont National Forest in southeastern Oregon and winters south of Clear Lake, Modoc Co., California. 48 pregnant does autopsied early in 1947 had an average of 1.75 embryos. Ratio of singles, twins, and triplets was 7:16:1. The peak of breeding was calculated to be between November 15 and December 6, but breeding continued to January 3. Low fawn survival, rather than reduced breeding potential or low buck ratio, is the effective factor in reducing the productivity of this herd.

MAMMALS--BIG GAME(DEER)--Continued

DARROW, ROBERT W. Winter deer feeding. New York State Conservationist 2(4): 21. Feb.-Mar. 1948.
Questions put and answered are (1) where is feeding necessary or desirable? (2) where possible? (3) what methods are best? (4) how should cuttings be made? (5) what species? (6) what are drawbacks of other common methods? (7) what can the Department do?

EINARSEN, ARTHUR S. Nine-year observation of a deer problem area. Transactions of the Twelfth North American Wildlife Conference. Pages 193-203, illus. 1947.
The area described is Murderer's Creek Basin in the Blue Mountains of northeastern Oregon. It was studied from 1937 to 1946. On trial plots from which deer and livestock were excluded, forage was restored on denuded ground in 4 years. Idaho fescue soon became dominant over cheat (Bromus tectorum). At the same time bitter-brush thrived and lupine was nearly exterminated. "Game managers responsible for forage must be alert and observe transitions on the range." Re-evaluation of the multiple-use plan and consequent adjustment are needed in many problem areas.

HUNTER, GILBERT N. Physical characteristics of Colorado mule deer in relation to their age class. 38 pages, illus. The Colorado Fish and Game Department, Denver. 1947.
This summarizes a study begun by H. L. Spencer in 1938. Over 2000 specimens were classified between 1938 and 1941. Dentition, head and antler measurements, and weight are the principal characters used in determining age. They are well illustrated by photographs and tables. This simplified method of age determination should be very useful in deer herd management.

MEAD, C. P. A new wildlife era: what the sportman's money is buying on the Virginia national forests. Virginia Wildlife 9(1): 16-18, illus. Jan. 1948.
10 years of cooperation between the Virginia Commission of Game and Inland Fisheries and the U. S. Forest Service in the management of wildlife have resulted in a big increase in deer west of the Blue Ridge. Improvement of food and cover has been the other principal objective. The author describes some of the work that has been done and tells how the George Washington National Forest staff is organized for its accomplishment.

ROBINETTE, W. LESLIE. Deer mortality from gunshot wounds, U. S. D. I., Fish and Wildlife Service, Wildlife Leaflet 295. 8 pages. July 1947.
The few data available in 3 published and 3 unpublished reports, covering areas from Wisconsin to Arizona, indicate crippling losses of 10-65% of the legal kill. The Forest Service made a study of crippling losses in mule deer on the Fishlake National Forest, Utah, from 1939 to 1946. A study of systematic counts of dead deer and of paunches of eviscerated deer led to an estimated loss of 17% of the legal removal. There was rather high recovery of wounded bucks, but a very low recovery of antlerless deer.

MAMMALS--BIG GAME(DEER)--Continued

SEVERINGHAUS, C. W. Relationship of weather to winter mortality and population levels among deer in the Adirondack region of New York. Transactions of the Twelfth American Wildlife Conference. Pages 212-223, illus. 1947.

The central Adirondacks appears to have always been marginal range for white-tailed deer. Snow depth is the critical weather factor in winter mortality. Depths over 20 inches greatly retard their movement. Low temperature affects deer mostly through its effect on the accumulation of snow.

MAMMALS--BIG GAME(ELK, ANTELOPE, ETC.)
(See also VEGETATION--FOREST, Ordway)

BROWN, ROBERT C. The Jackson Hole elk herd: its history, range, and management. Wyoming Wild Life 11(12): 4-11, 29-32, illus. Dec. 1947.

This article outlines their history from 1882 to 1947. The highest official count between 1912 and 1945 was 22, 035 in 1935. In 1945 it was about 15,000. There is little winter range in Jackson Hole, where half of the herd winters. Less than half of the herd winters in the Gros Ventre and Hoback districts of the Teton National Forest. There is great need for additional, well-distributed winter range. Complete protection on the Jackson Hole Monument, the removal of grazing lands from the forest, or the sale of public lands would hit the elk hard--and the elk are of great economic importance to the area. There is great need for the publication of a comprehensive study of the Jackson hole herd to be used both in management and in getting public support for the management program.

BUECHNER, HELMUT K. Range use of the pronghorned antelope in western Texas. Transactions of the Twelfth North American Wildlife Conference. Pages 185-191. 1947.

Research from June to December 1946 is the base for this report. There are about 9000 antelope in the State. They compete with livestock for range; and their management depends on the attitiude of ranchers. A good deal of food habits information has been obtained through observation. Nearly 100 species of plants were eaten in the fall. In both summer and fall over four-fifths of the forage was forbs and browse, the remainder grasses. The author discusses the relation of antelope and livestock to many of the species eaten. No difference could be found between the foods of does, bucks, and young, probably because overgrazing by livestock left them little choice. In spite of some overgrazing, antelope do well on cattle ranches. In contrast, sheep ranches are usually overstocked, and sheep and antelope both feed heavily on forbs and browse. At $40.00 per buck, antelope are an asset to the cattle rancher, not a liability.

ELLIOTT, ROBERT R. Antelope restoration in Colorado. Colorado Conservation Comments. 10(5): 3-4,22, illus. Mar. 1948.

An extensive program of trapping and transplanting is under way as a federal aid project. In 1947, 6 sites in various parts of Colorado were chosen for stocking with antelope from the northeastern part of the State.

MAMMALS--BIG GAME(ELK, ANTELOPE, ETC.)--Continued

The author describes how they were trapped and moved (159 animals, to date). There has been poaching; and the efforts of everyone interested in the welfare of the antelope are needed to combat it.

MAMMALS--FURBEARERS(GENERAL)

ASHBROOK, FRANK G. Annual fur catch of the United States. U. S. D. I., Fish and Wildlife Service, Wildlife Leaflet 298. 24 pages. Sept. 1947.
The annual catch 35-40 years ago was worth 25 million dollars. Now it is worth 5 times as much, and the demand continues to increase. Five-sixths of the fur produced is from wild animals. Continued production requires better land management and more careful regulation of the take. The catch is tabulated state by state, by species and years. For most of the states there are figures for 5 or 6 consecutive years in the 1940's.

GIBBONS, G. DONALD. Economic importance of the fur industry. Transactions of the Twelfth North American Wildlife Conference. Pages 139-146. 1947.
The Fish and Wildlife Service and the fur industry are working to conserve fur resources. The annual value of furs sold at retail is now over one-half billion dollars. It has been suggested that the raw fur trade consider setting up a cooperative research unit under the auspices of the Wildlife Management Institute.

McKEAN, WILLIAM T. Winter foods of North Dakota predatory animals. North Dakota Outdoors 10(8): 5-6, illus. Feb. 1948.
A laboratory study of 585 stomachs (331 of them full enough to be used in figuring percentages) indicated that ".....no North Dakota predatory mammal is more than moderately detrimental to the state's game animals during winter time." The same was true of farm animals. The predators studied were mink, skunk, fox, weasel, raccoon, badger, and coyote. Mice were the commonest food. Carrion was also common. Muskrats were a conspicuous food of mink and pheasants of foxes, but the few stomachs involved may not have been typical.

VORHIES, CHARLES T. Review of new techniques--fur bearers and other small mammals. Transactions of the Twelfth North American Wildlife Conference. Pages 324-329. 1947.
The author reviews published studies on rodent baits, techniques for studying Norwary rats, field rodent control by destruction of burrows, reduction of jackrabbit damage, beaver management in South Dakota, live trapping muskrats, fur resource management in British Columbia, a box trap for snowshoe hares, and management of cottontails in Ohio.

MAMMALS--FURBEARERS(MUSKRAT & NUTRIA)

DASPIT, ARMAND P. Development of nutria in few years since it's introduction in Louisiana has been virtually phenomenal. Louisiana Game, Fur and Fish 6(1):4. Dec. 1947.

Nutria propagation was begun in Louisiana in 1930 by E. A. McIlhenny. They did so well that they were soon released in the marshes. In the 1946-1947 season 18,000 were caught-- over twice the take of the preceding season. Nutria and muskrat do not compete with one another, the nutria preferring fresh-water marshes, the muskrat brackish or salt.

DOZIER, HERBERT L. Salinity as a factor in Atlantic coast tidewater muskrat production. Transactions of the Twelfth North American Wildlife Conference. Pages 398-420, illus. 1947.

This investigation took place on the Delmarva Peninsula between 1932 and 1947. It included the measurement of muskrat populations and the chloride content of water samples and other habitat factors. Natural and man-made changes in topography and water tables have tended to create habitat unsuitable for muskrats. Unfavorably high salinity is caused in summer by high temperatures and low rainfall and at other times by high tides. Prolonged high salinity destroys muskrat food plants and kills both young and old muskrats. Recovery of marsh vegetation and restoration of a normal muskrat population may be very slow. Limited numbers of muskrats live in some highly saline coastal marshes.

SHANKS, CHARLES E. The pelt-primeness method of aging muskrats. American Midland Naturalist 39(1): 179-187, illus. Jan. 1948.

A symmetrical pattern characterized the pelts of sub-adult muskrats from Russia and Missouri; a mottled pattern characterized the pelts of adults. "The pelt-primeness method of age determination offers a means of acquiring mass statistics as to age and sex composition of large muskrat populations."

MAMMALS--RODENTS
(See also MAMMALS--FURBEARERS(GENERAL), Vorhies)

LOW, JESSOP B. Rodents eat bark and kill shrubs. Utah Fish and Game Bulletin 4(8): 1-4, illus. Jan. 1948.

The Hardware Big Game Preserve of 6,000 acres was established on the Cache National Forest in 1946. It is completely surrounded by high summer range used by elk, deer, and livestock. Browse plants are largely sagebrush, bitterbrush, and mountain-mahogany. In 1947 sagebrush and bitterbrush adjacent to hay fields were severely girdled by white-footed and meadow mice. The larger plants, which were used as home sites, were damaged more than the smaller ones. Elk and deer browsing was not at all detrimental to the plants in the rodent damage area; but mice killed 50-75% of the best browse species. The mice might be reduced by the encouragement of hawks, owls, and mammalian predators, and by poisoning.

MAMMALS--RODENTS --Continued

MOORE, JOSEPH C. Nests of the Florida flying squirrel. American Midland Naturalist 38(1): 248-253. July 1947.
The author found several outside nests in turkey oak forest in Florida. The most complex were thatched with leafy twigs and lined with Spanish moss or palmetto fibers, and were occupied by females with young. Other nests had no thatch, still others no lining. Flying squirrels often modified and used old fox squirrel nests. Of 36 occupied nests discussed, 11 were in woodpecker-hole dens, 14 utilized fox squirrel nests. and 11 were of original outside construction.

NICHOLES, J. LAURENS. Vandals of the night. 118 pages, illus. Publication Press, Pasadena. 1948.
This book deals with rats: species and history, habits, the diseases they cause, their use as laboratory animals, control. The author compares various poisons. He considers barium carbonate the most useful. He also discusses trapping and rat-proofing. There are chapters on mice, lice, and fleas.

MAMMALS--RABBITS
(See also MAMMALS--FURBEARERS(GENERAL), Vorhies)

ATZENHOFER, DANIEL R., and LEEDY, DANIEL L. The cottontail rabbit and its management in Ohio. The Ohio Division of Conservation and Natural Resources, Wildlife Conservation Bulletin No. 2. 15 pages, illus. Dec. 1947.
This is a revision of an article entitled "Management of Ohio Cottontails", by Daniel L. Leedy and George E. Laycock, that was published in the June 1946 Ohio Conservation Bulletin. It reviews the cottontail's life history and its recreational and economic status. A series of 14 drawings help to explain suggestions for management.

HENDRICKSON, GEORGE O. Cottontail management in Iowa. Transactions of the Twelfth North American Wildlife Conference. Pages 473-477. 1947.
Iowa harvests over a million Mearns cottontails every year. They often become pests in orchards and gardens; but for the sake of the hunter the Conservation Commission has made long-range plans for their increase by improving natural food and cover. The author outlines their complex relations with other wildlife and with diseases, weather, and farming.

MAMMALS--INSECT-EATERS

DALQUEST, WALTER W. Notes on the natural history of the bat, Myotis yumanensis, in California, with a description of a new race. American Midland Naturalist 38(1): 224-247, illus. July 1947.
This bat ranges over much of western United States and is especially common in California. There are 4 subspecies in California. The article discusses daytime retreats, flight and hunting, breeding and young, parasites and enemies, and migration and hibernation.

MAMMALS--MARINE

GOODWIN, GEORGE G. Fin-footed marine mammals, the pinnipeds. Audubon Nature Bulletin 18(6): 1-4, illus. Feb. 1948.
The author reviews the behavior, food, distribution, and economic value of sea lions, walrus, and hair seals. All are carnivorous. Nearly all were formerly much more abundant.

IMLER, RALPH H., and SARBER, HOSEA R. Harbor seals and sea lions in Alaska. U. S. D. I., Fish and Wildlife Service, Special Scientific Report No. 28. 23 pages, illus. Apr. 1947.
An investigation was made in 1945 and 1946 to determine the extent of predation on fish. The report discusses distribution, depredations, control, and utilization of the harbor seal and Steller sea lion. The former was studied on the Stikine and Copper River deltas, the latter at various points from Sitka to Kodiak Island. The authors ".....concluded that the harbor seal is an insignificant factor in the conservation of the salmon runs. It is, however, a costly nuisance to the salmon fisherman using gill nets." Sea lions eat a considerable amount of commercial fish, although their total population is low. There is a growing demand for pelts, which should obviate the need for federal reductional control of seals. In contrast, sea lion numbers should be reduced.

SCHEFFER, VICTOR B.,and SLIPP, JOHN W. The whales and dolphins of Washington State; with a key to the cetaceans of the west coast of North America. The American Midland Naturalist 39(2): 257-337, illus. Mar. 1948.
The authors outline the history of whaling in Washington and list 20 species of whales and dolphins, discussing morphology, behavior, food, reproduction, parasites, and economic status. There are 50 photographs; selected tabulations of whale takes, output of whale products, and measurements; and a list of 65 references.

REPTILES & AMPHIBIANS
(See also BIRDS--SONGBIRDS,Knowlton)

MITTLEMAN, M. B. Miscellaneous notes on Indiana amphibians and reptiles. American Midland Naturalist 38(2): 466-484, illus. Sept. 1947.
This article includes distributional, ecological, and taxonomic data on 36 species. There is a list of about 30 references.

NICKELL, GAYLE. Amphibians and reptiles of the Pacific states. 236 pages, illus. Stanford University Press, Stanford University, Calif. 1947. $4.00.
Two chapters describe these animals briefly, by family, genus, and species. Two more describe their homes, foods, reproduction, growth, and enemies. One chapter discusses collecting and care. There are about 125 photos; detailed, illustrated keys; and a bibliography of more than 100 titles.

RAUSCH, ROBERT. Observations on some helminths parasitic in Ohio turtles. American Midland Naturalist 38(2): 434-442. Sept. 1947.
33 helminths (mostly trematodes and nematodes) were found in 128 turtles of 7 species. These came from 15 different localities, from all parts of Ohio. Parasitism seemed to increase with the age of the host.

REPTILES & AMPHIBIANS--Continued

TEST, FREDERICK H., and BINGHAM, BARBARA A. Census of a population of the red-backed salamander (Plethodon cinereus). The American Midland Naturalist 39(2): 362-372, illus. Mar. 1948.

The authors made this study in the spring of 1945 on about 2.6 acres of woodland near Ann Arbor, Michigan. They report on methods, occupation of covers (less than 5% of those availbale were occupied), size of population, color ratios, size groups, and the sex ratio in adults. Nearly 500 individuals were removed on 4 successive censuses. Migration into the area apparently had little effect on the samples. Other amphibians were scarce.

WHEELER, GEORGE C. The amphibians and reptiles of North Dakota. American Midland Naturalist 38(1): 162-190. July 1947.

High latitude and low rainfall are among the reasons why only 11 forms of Amphibia and 14 of Reptilia have been found in North Dakota. The author keys them, gives pertinent historical and geograhical information, and lists all North Dakota records by counties and localities.

BIRDS--BEHAVIOR

SMITH, STUART. How to study birds. 192 pages, illus. Collins, 14 St. James's Place, London. 1945. 8 shillings, 6 pence.

13 chapters tell the story of the major phases of bird life history and behavior, describe recent findings, and suggest what we may do to increase our knowledge. Some of the subjects treated are migration, territory, nesting, inheritance and imitation, vision and reaction to color, flight, population problems, mind. References to literature are listed in the back by chapter and page. There are attractive and useful photographs and drawings, useful bird lists and indexes.

BIRDS--BIBLIOGRAPHY

AUSTIN, O. L., JR., and OTHERS. Japanese ornithology and mammalogy during World War II. U. S. D. I., Fish and Wildlife Service, Wildlife Leaflet 305. 45 pages. Mar. 1948.

This annotated bibliography is introduced by a discussion of general progress and some of the outstanding accomplishments. Handicaps to such work were very great. Many of the articles deal with familiar species, genera, and subjects.

BIRDS--COMMUNITIES

HERING, LOUISE, Nesting birds of the Black Forest, Colorado. The Condor 50(2): 49-56, illus. Mar.-Apr. 1948.

In 1945 the author censused 75 acres of yellow pine forest northeast of Colorado Springs. There was a total of 2 1/3 birds per acre. A willow-bordered creek was possibly responsible for this high density. 20 species nested, the commonest being robin, western bluebird, western wood pewee, gray-headed junco, and chipping sparrow. The vicinity of the creek, pine interiors, pine foliage, and the ground were the principal nesting habitats.

BIRDS--COMMUNITIES--Continued

PROVOST, MAURICE W. Nesting of birds on the marshes of northwest Iowa. American Midland Naturalist 38(2): 485-503, illus. Sept. 1947.

The observations reported upon were made in Clay and Palo Alto Counties in 1942. Of 20 species that nest regularly in marshes in northwest Iowa, the author discusses 13: pied-billed grebe, black-crowned night heron, American and least bitterns, marsh hawk, Virginia rail, Florida gallinule, coot, Forster's and black terns, long-billed marsh wren, yellow-headed blackbird, and red-wing. Duck nesting has been described elsewhere. The marsh environment is rich in submerged, floating, and emergent vegetation, and in insects and mollusks. It has a high density of nesting birds. An analysis of optimum and average water depths for plant growth and bird nesting led the author to conclude that density of cover may be a limiting factor to nesting. Algal mats and muskrats have important roles.

BIRDS--FAUNAS & MANUALS

FISHER, HARVEY I. The question of avian introductions in Hawaii. Pacific Science 2(1): 59-64. Jan. 1948.

Most of the birds of Hawaiian urban areas and many of those of the mountains and forests are exotics. Of 232 species of birds recorded, 94 are exotics. 53 of these are probably established. There has been a strong movement back of these introductions, but little is known of the history of most of them. The behavior of some species has changed considerably in this new environment where food is abundant, the climate equable, and avian predators and diseases are almost unknown. Even if introductions were stopped it would take years to re-establish any sort of ecological balance. The author recommends procedures for control, if importations are to continue. These include the study of the species in their native habitats and wherever else they have been introduced; careful record keeping from beginning to end; quarantine and pathological examination; and limited liberation under careful observation.

JAQUES. H. E. How to know the land birds. 196 pages, illus. Wm. C.Brown Co., Dubuque, Iowa. 1947. $2.50.

This is a book of pictured keys to all the land birds of United States and southern Canada. There are small black, white, and gray pictures of most of the species, somewhat after the style of Peterson--also brief descriptions and tiny distribution maps. The index is combined with a pictured glossary.

LARRISON, EARL J. Field guide to the birds of King County, Washington. 66 pages, illus. The Seattle Audubon Society, Seattle. 1947.

King County extends from Puget Sound to the crest of the Cascades. 266 species of birds have been found in its large variety of habitats. They are described in detail in a field key that first separates water birds from land birds; then separates the latter into those larger than the robin and those the same size or smaller. An index on page 15 helps one to locate a particular bird or group. There are good drawings of 60 species.

BIRDS--FAUNAS & MANUALS--Continued

RANDALL, T. E. Birds of the eastern irrigation district, Brooks, Alberta. The Canadain Field-Naturalist 60(6): 123-131. Nov.-Dec. 1946.

This list of over 200 species is based on records made in 1943-1945. About 200,000 acres of the area is irrigated. There are several large reservoirs (Lake Newell covers 40 square miles) and many smaller lakes, ponds, and marshes which provide room and breeding grounds for thousands of ducks and geese. Planted belts of trees and spontaneous thickets have attracted many song birds. Pheasants and Hungarian partridges have become abundant during the past few years.

BIRDS--FOOD

ROGERS, IRL. The effect of DDT on a bird population. The Condor 50(2): 89-90. Mar.-Apr. 1948.

At Modesto, California, 20 acres of settling ponds are regularly frequented by shorebirds, pipits, and Brewer blackbirds from August to April. Beginning in September 1947 the area was sprayed with DDT about every 5 days. The bird numbers were soon much reduced, and continued so into the winter. After sprayings stopped, seed eaters were as common as in former years. The author concludes that the DDT killed nearly all of the animal life used as food by the birds.

BIRDS--MANAGEMENT

YOUNG, W. A. Wing amputation of birds in lieu of pinioning. Journal of the American Veterinary Medical Association 112(852): 224-226. Mar.1948.

The author discusses the background for pinioning or amputation and describes instruments, method of holding, anasthesia, surgical procedure, and care. Of several hundred birds operated upon only 2 died.

BIRDS--WATERFOWL

COTTAM, CLARENCE. Waterfowl at the crossroads. Transactions of the Twelfth North American Wildlife Conference. Pages 67-82. 1947.

Perpetuation of wildfowling will depend on a number of things: careful regulation of the annual kill, development of public support of conservation, greater effort to eliminate crippling and other losses, recognition of the need of dedicationg lands and waters to wildlife and an increase in the cost of the duck stamp.

GILLHAM, CHARLES E. Wildfowling can be saved. Transactions of the Twelfth North American Wildlife Conference. Pages 47-51. 1947.

The author believes that "under present methods and conditions..... duck and goose shooting is on its way out." But he believes, also, that with sane land and water use, enforcement of up-to-date laws, education, applied research, and, above all, sportsmanship, wildfowling can be saved.

BIRDS--WATERFOWL--Continued

HANSON, HAROLD C., and SMITH, ROBERT H. Preliminary report on the Canada geese of the Mississippi flyway. Illinois Natural History Survey, Biological Notes No. 18. 17 pages. Sept. 1947.

Since 1932 many of the geese that formerly wintered from southern Illinois to Louisiana have concentrated in the vicinity of Horseshoe Lake in southern Illinois. In recent years the number wintering there has dropped and the kill has been heavy. This led to closing all the states in the Mississippi flyway to goose hunting in 1946. Since 1939, neither refuges nor hunting regulations have been very effective in maintaining this population. Lack of food at Horseshoe Lake and a decrease in the wariness of the birds makes it imperative that they be scattered to islands and bars of the Mississippi River, and that contact with humans be reduced.

HOCHBAUM, H. ALBERT. The effect of concentrated hunting pressure on waterfowl breeding stock. Transactions of the Twelfth North American Wildlife Conference. Pages 53-62. 1947.

The effect has been to burn out the breeding stock further and further north. To save waterfowl we must ".....protect the place and the bird at the same time." The author is eloquent in describing present conditions and in pointing out the things we must do to keep our birds and our hunting. ".....improvement of breeding conditions is just as important in the U. S. A. as in Canada."

LOW, JESSOP B. Review of new techniques--waterfowl. Transactions of the Twelfth North American Wildlife Conference. Pages 339-343. 1947.

The author describes recent advances in determination of sex and age, understanding territorialism and its application to waterfowl management, control of botulism, and use of airplanes in censusing.

SOWLS, LYLE K. New techniques for breeding ground surveys. Transactions of the Twelfth North American Wildlife Conference. Pages 448-452. 1947.

At the Delta Waterfowl Research Station in Manitoba intensive work is being done in April, May, and June in determining the numbers of breeding ducks. Detailed studies of different types of areas will lead to a method of sampling broad regions. In 1946 the population trend was strongly downward. All over southern Manitoba ".....there were more suitable water areas than there were ducks to fill them."

SPERRY, CHARLES C. Botulism control by water manipulation. Transactions of the Twelfth North American Wildlife Conference. Pages 228-232. 1947.

A water-level-control program was in use at the Bear River Refuge in northern Utah from 1943 to 1946. It demonstrated that botulism losses were likely to increase if damp mud flats were submerged, to decrease with progressive lowering of water on exposed lake bottoms. The control of botulism by lowering water levels may be prevented by inability to drain off water quickly to areas that are safe from botulism.

BIRDS--WATERFOWL--Continued

WILLIAMS, CECIL S., and OTHERS. Waterfowl breeding conditions--summer 1947. U. S. D. I.,Fish and Wildlife Service, Special Scientific Report No. 45. 101 pages, illus. Feb. 1948.

Duck hunting regulations each year depend on both a January inventory and appraisals of production on the breeding grounds. Before 1947, several men made broad surveys of breeding territory each year. In 1947, a somewhat uniform method of appraising breeding grounds was applied to Alberta, Sasktchewan, and Manitoba. This work comprised 2 phases, reconnaissance and banding. Reconnaissance was conducted on the ground and in the air. The results of the work in these provinces are summarized by Allen G. Smith, John J. Lynch, and A. S. Hawkins. Some of the subjects treated are physiography, methods, weather and water conditions, nesting populations, nesting success, disease and predation, and banding. Other reports cover conditions (some observed entirely from the air) in the prairie provinces, Maine, North Dakota, western Alaska, and the national wildlife refuges. Their authors are Robert H. Smith, Bruce S. Wright, Jerome Stoudt, Howard L. Mendall, M. C. Hammond, Edward Wellein, and Richard E. Griffith. David L. Spencer discusses "Aerial waterfowl breeding ground survey methods."

BIRDS--FISH-EATERS

BAILLIE, JAMES L.,JR. The double-crested cormorant nesting in Ontario. The Canadian Field-Naturalist 61(4): 119-126, illus. July-Aug. 1947.

Cormorants are increasing and are expanding their breeding range. Colonies are now known in Lake Superior, Lake Nipigon, Lake of the Woods, Lake Huron and Georgian Bay, Lake Ontario, Lake Erie, and the upper St. Lawrence River. In Lake of the Woods cormorants take a great many fish from pound nets; but they appear, in general, to take twice as many coarse fish as they do commercial fish. In Lake Huron they do some damage to both sport and commercial fish, but perhaps less than is commonly believed.

GROSS, ALFRED O. Gulls of Muskeget Island. Bulletin of the Massachusetts Audubon Society. 32(2): 43-47, illus. Mar. 1948.

Muskeget Island is the largest sea-bird colony in Massachusetts. Early in the nineteenth century it was primarily a tern colony. Laughing gulls were abundant by 1850; almost disappeared by the end of the century; increased from 1,000 birds in 1910 to 20,000 in 1940; then decreased again to 6,000 in 1947, while herring gulls increased. There were no nesting herring gulls before 1922; but by 1947 Muskeget had the largest herring gull colony on the New England coast. Terns are now much reduced; and the control of herring gulls is under way. Their control for several years in Maine has been followed by an increase in terns and laughing gulls.

BIRDS--UPLAND GAME(GENERAL)

BUSS, IRVEN O. Review of new techniques--gallinaceous birds. Transactions of the Twelfth North American Wildlife Conference. Pages 330-335. 1947.

Over 25 published and unpublished references are the background for this article. They deal with pheasant censusing, safeguarding birds by the use of colored rodent-control baits, burning for grouse, importance of subspecies in making transplants, mechanics of Wisconsin quail and pheasant population studies, use of islands in wildlife studies, etc.

MILLER, WILFORD L. Rural letter carriers complete upland game surveys. North Dakota Outdoors 10(8):7, illus. Feb. 1948.

The author compares the counts for December 1946 and December 1947. The number of pheasants, Hungarian partridges, sharp-tailed grouse, and pinnated grouse counted in 1947 was double that of 1946. In eastern North Dakota the increase was due to heavy snow forcing the birds to congregate along the highways. Elsewhere conditions were about the same. There was a general increase in pheasants in the southern part of the state.

BIRDS--UPLAND GAME(BOBWHITE AND WESTERN QUAIL)
(See also VEGETATION--WILDLIFE PLANTS, Davison)

GLADING, BEN. Game watering devices for the arid southwest. Transactions of the Twelfth North American Wildlife Conference. Pages 286-292, illus. 1947.

In California and the Southwest are large areas with ideal food and cover for small game, but with very little water. Many attempts have been made to make more water available. Between 1942 and 1946 the provision of water in San Benito Co., California areas was accompanied by a big jump in the summer population of valley quail. Gambel quail responded about the same way in San Bernardino and Riverside Counties in 1945 and 1946. The device used to store winter rainfall for summer use has been improved and now is being installed in all quail mangement projects. This "gallinaceous guzzler M-2-A" is described in detail.

HJERSMAN, HENRY A. The California valley quail in New Zealand. California Fish and Game 34(1): 33-36, illus. Jan. 1948.

Only a few of many introduced species of game birds have established themselves in New Zealand. One of these is the valley quail. They were brought in in the 1860's and soon became common. In one area they later decreased, then became common again in the early 1900's. In another area they became common and remained so until the early 1900's. They are now in a general decline.

JACKSON, ALFRED S. A bobwhite quail irruption in northwest Texas lower plains terminated by predation. Transactions of the Twelfth North American Wildlife Conference. Pages 511-517. 1947.

In 1941-1943 an irruption was cut back by predation and the survivors almost failed to reproduce. By late 1942 the density of quail in the best habitat was believed to have reached a bird to the acre. At the same time,

BIRDS--UPLAND GAME (BOBWHITE AND WESTERN QUAIL)--Continued

hawks, cotton rats, and cottontails were abundant. Marsh hawks apparently destroyed many quail, and horned owls took quail after the owls started to nest. 1943 was much drier than the 2 preceding years and cover became increasingly sparse. There was no indication of lack of food or presence of disease. The region has a background of drought and hard range usage; and the best type of quail management seems to be in maintaining refuges of the most stable habitat available. In adverse seasons these would preserve breeding stock.

MITCHELL, TED R. Natural predation and quail. Wildlife in North Carolina 12(1): 4-6, illus. Jan. 1948.

The author summarizes the observations of workers in several states. Most of them indicate that foxes and hawks ordinarily do not kill many quail.

MORRIS, J. ANTHONY. The use of the complement fixation test in the detection of ulcerative enteritis in quail. American Journal of Veterinary Research 9(30): 102-103. Jan. 1948.

"Quail disease" is important to propagators of upland game birds. At the Patuxent Research Refuge, Laurel, Md., tests during a spontaneous outbreak and experimental trials indicated the possibility of using this test to detect carriers of ulcerative enteritis in quail.

BIRDS--UPLAND GAME(PHEASANT)

BEAUDETTE, F. R., and BLACK, J. J. Equine encephalomyelitis in New Jersey pheasants in 1945 and 1946. Journal of the American Veterinary Medical Association 112(851): 140-146. Feb. 1948.

13 outbreaks have been reported in New Jersey since 1938. On 2 game farms the disease showed the capacity to become enzootic (3757 birds died at Forked River in 1945). The outbreaks cannot be explained on the basis of insect transmission. Very few outbreaks have been reported in game birds outside New Jersey.

BENSON, DIRCK, and BRADLEY, BEN. More about the Seneca test. New York State Conservationist 2(4): 22-23, illus. Feb.-Mar. 1948.

In Seneca County, New York in 1947 heavy trapping of both red and gray foxes preceded and accompanied the release of pheasants. 345 foxes--over half the estimated population--were taken on 88,000 acres. Of over 10,000 banded pheasants released, about half, each, were placed on the study area and a check area. There was no significantly greater survival of pheasants on the study area; but trapping will be continued another year to determine the effect of fox control on over-winter survival of pheasants and on productivity in the 1948 breeding season.

BIRDS--UPLAND GAME(PHEASANT)--Continued

HOLM, EARL R. Poor John Pheasant! New York State Conservationist 2(5): 2-4, illus. Apr.-May 1948.

Game-farm birds have a satisfactory rate of survival. With adequate range and good stock, strong-flying birds will be produced. Release of birds between 8 and 12 weeks old gives them a good chance to become adjusted to the wild--and every New York State game-farm pheasant has at least a month in a big, open-range field before it is finally released.

LEEDY, DANIEL L., and DUSTMAN, EUGENE H. The pheasant decline and land-use trends, 1941-1946. Transactions of the Twelfth North American Wildlife Conference. Pages 479-489, illus. 1947.

Since the war, pheasant populations in Ohio have decreased over one-third from those of 1938-1941. A suggested reason has been changes in land use. The authors review these changes and conclude that farming practices unfavorable to pheasants have contributed to the decline. Among these practices are (1) a decrease in hay crops with consequent loss of nesting areas and (2) increases in power mowing and night mowing of alfalfa with resulting increase in mortality. Increased acreages of wheat, soybeans, oats, and corn, and the wastage of corn by machine picking have added to the food supply. Increased combining of wheat has reduced mortality during wheat harvest. But these benefits have not offset the adverse factors.

BIRDS--UPLAND GAME(RUFFED GROUSE, ETC.)

ANONYMOUS. Survey shows wild turkey nearing extinction in State. Louisiana Game, Fur and Fish 6(5):3, illus. Apr. 1948.

A Louisiana Pittman-Robertson project showed a 15% decline between 1941 and 1947 to a total of about 1,500 birds. Turkeys were found in 21 parishes. Populations with a proper breeding potential occurred in only 3 areas. In the last year of the study only 6 parishes had 10 or more flocks apiece. Large contiguous blocks of hardwood forest, low human population, and protected areas are essential to a large turkey population. A detailed report of the study will be published soon.

BUMP, GARDINER, and OTHERS. The ruffed grouse: life history, propagation, management. 915 pages, illus. New York State Conservation Department, Albany. 1947. $10.00.

The Ruffed Grouse Investigation began in New York in 1930, following an unprecedented low in the grouse population. Many men had a part in the investigation; and 17 of them cooperated in writing the book. It has 4 parts: (1) history and biology, (2) factors that affect abundance, (3) management, and (4) an appendix that comprises information on techniques, anatomy and physiology, food habits, predation, propagation of food and cover plants, etc. An example of the great detail in which the subject is covered is the 450-page discussion of grouse ecology, entitled "The factors that affect abundance." While overwhelmingly detailed, the book is so well organized that almost any kind of information can be located through the contents, chapter summaries, index, and illustrations. The summaries at the beginning of the chapters are detailed; and opposite each item is the page on which it is discussed. If one isn't in a hurry--as he cannot very well be with

BIRDS--UPLAND GAME(RUFFED GROUSE, ETC.)--Continued

such a subject and such a book-- he may find browsing through the illustrations a happy approach. There are several hundred of them: photographs,maps, sketches, 4 paintings. The sketches by Seagears and Everett and many of the photos, especially the larger ones and those in series illustrating cover types and nest sites, make the book very much alive. Reference to over 400 publications does not obscure the originality of the investigation.

BUTCHT, MARTIN. Wild turkeys coming back. Colorado Conservation Comments 10(5): 11-12,21. illus. Mar. 1948.

Wild turkeys [illegible] to very low numbers in 1925. With more protection and better food they increased to about 500 birds in 1931. Following a big loss in November 1931, the State undertook stocking with turkeys from Arkansas and Oklahoma. In 1940 a more systematic program was developed; and since that time many historical ranges have been reoccupied. There has been good survival and a good spread from the numerous stocking points.

QUICK, H. F. Winter food of white-tailed ptarmigan in Colorado. The Condor 49(6): 233-235. Nov.-Dec. 1947.

From 1941 to 1947 the author observed ptarmigan in several localities and collected and studied over 500 droppings. In winter they fed principally on buds and twigs of alpine willows and to a lesser extent on the needles of alpine fir.

WING, LEONARD. Seasonal movements of the blue grouse. Transactions of the Twelfth North American Wildlife Conference. Pages 504-509. 1947.

In winter, blue grouse range through high, predominantly Douglas fir, country. Their summer range in the Northwest is at the edge of timber in the lower foothills. The upward movement in the fall takes longer than the descent in the spring. The author bases most of his remarks on published papers, of which he cites about 20. He includes notes on food and general behavior.

BIRDS--HAWKS & OWLS

KIRKPATRICK, CHARLES M., and CONAWAY, CLINTON H. The winter food of some Indiana owls. American Midland Naturalist 38(3): 755-766. Nov. 1947.

The authors reported upon the examination of over 500 complete or part pellets of barn, long-eared, short-eared, and great horned owls from Tippecanoe County, Indiana. Microtus ochrogaster made up half of the total food items. Game, most of which was cottontails, made up 4% of the total. Most of the game was taken by great horned owls; but this species also took quite a few Norway rats.

WILLIAMS, RALPH B., and MATTESON, CLYDE, JR. Wyoming hawks. Wyoming Wild Life 11(12): 21-24, illus. Dec. 1947.

Pigeon hawks are the subject of this article. Two subspecies occur in Wyoming in migration and one of these occasionally nests. The authors describe plumages and habits. Wild birds are a common food.

BIRDS--SONGBIRDS

JACKSON, C. F. Notes on the bird population at the Isle of Shoals. The Audubon Society of New Hampshire Bulletin 18(2): 49-54,63. Summer 1947.
From 1928 to 1938 careful records of birds were kept each summer from June 15 to August 15. An annotated list of over 80 species emphasizes the scarcity of nesting upland birds, of which the only common species were song sparrow, catbird, and yellowthroat. The author suggests that the scarcity of other species may be due to the small amount of continuous, suitable habitat.

KNOWLTON, GEORGE F. Vertebrate animals feeding on the Mormon cricket. American Midland Naturalist 39(1): 137-138. Jan. 1948.
9 kinds of song birds and 3 kinds of lizards taken during Mormon cricket infestations in Millard County, Utah in 1943-1945 contained remains of crickets and other insects.

LINSDALE, JEAN M. A ten-year record of bird occurrence on the Hastings Reservation. The Condor 49(6): 236-241. Nov.-Dec. 1947.
This is a summary of observations betwwen 1937 and 1947 on a 1,600-acre tract in the Santa Lucia Mountains, Monterey County, California. The 139 species of birds comprise 48 that live on the area for their complete life cycle 52 that live there regularly but do not complete their life cycle, and 39 that stay for only a short time. The commonest birds are California jay, spotted towhee, brown towhee, plain titmouse, and Oregon junco. The response of each species to the environment determines the class into which it falls. "In so short a time as 10 years numerous species have changed from one group to another, usually as conditions on the land changed, but sometimes in response to changes in conditions elsewhere."

RUST, HENRY JUDSON. Migration and nesting of nighthawks in northern Idaho. The Condor 177-188, illus. Sept.-Oct. 1947.
In this summary of 36 years' observations in the vicinity of Coeur d'Alene, Idaho, the author describes feeding habits and food. The food in the stomachs of 11 nighthawks was mostly insects. Beetles, including many wood-borers, were dominant in July. Many ants were taken both in the air and on the ground. In late summer, grasshoppers were eaten in stormy weather on the ground.

INVERTEBRATES(GENERAL)

WHITLOCK, J. H. Illustrated laboratory outline of veterinary entomology and helminthology. 87 pages, illus. Burgess Publishing Co., 426 South Sixth St., Minneapolis 15, Minn. $3.00.
This, the first part of a two-part guide, is designed to aid in identifying common parasites of domestic animals. It deals with Diptera and other insects, ticks and mites, flukes, tapeworms, and nematodes. There are 31 pages of large-scale drawings for the student to study and label. There is a key to mites. Much other information is given in tables.

CRUSTACEANS

TRESSLER, WILLIS L. A check list of the known species of North American freshwater Ostracoda. American Midland Naturalist. 38(3): 698-707. 1947.
A list of 204 species includes notes on distribution. There are about 50 references to publications. The author is preparing a handbook on this group.

MOLLUSKS

DAILEY, CHARLOTTE. Distribution of aquatic mollusks in Minnesota. American Midland Naturalist 38(3): 671-697, illus. Nov. 1947.
This article discusses and lists the mussels of the Mississippi, Hudson Bay, and St. Lawrence drainages. It describes the habitats (small streams, small rivers, medium-sized rivers, large rivers, ponds, soft-water lakes, medium-hard-water lakes, hard-water prairie lakes, and river lakes), and lists the mussels and snails found in each. Most of the species are found in a restricted environment. A complete, annotated list includes 45 species of mussels and 51 species of snails. There is a list of 22 references.

INSECTS

ALEXANDER, CHARLES P. Records and descriptions of North American crane-flies (Diptera) Part VII. The Tipuloidea of Utah, I. American Midland Naturalist 39(1): 1-82, illus. Jan. 1948.
A general geographic account of Utah is followed by a survey of the Tipuloidean fauna. Crane-flies of Utah are better known than in any other Rocky Mountain or Great Basin state. 187 species are recorded. There is a detailed description of crane-fly environments in Zion National Park, Sevier River near Hatch, High-Lowe Creek and Pond in Beaver County, and Logan Canyon. Collector's localities and literature references are listed. The systematic portion has ample descriptions and locality lists and occasional detailed drawings.

HALL, DAVID G. The blowflies of North America. 477 pages, illus. The Thomas Say Foundation. 1948. J.J. Davis, Purdue University, Lafayette, Indiana. $6.00.
This manual has several beautiful colored plates of adult flies and many large-scale drawings showing morphological details. Keys and descriptions are detailed. The latter include biological and economic notes. The screwworm fly, Callitroga americana, causes the death of large numbers of wild mammals of many species in the South. The bird nest screwworm flies (Apaulina) have been reported from over 50 species of birds including members of most of the families of Passeriformes, hawks, long-eared owl, and mourning dove. The cluster fly, Pollenia rudis, is an obligate parasite of earthworms. In the control of blowflies the disposal of dead animals is important. Rodent-control units should dispose of the rats or other rodents they kill to obviate the possible spread of plague, typhus, or other diseases.

ANNELIDS

HARTMAN, OLGA. The polychaetous annelids of Alaska. Pacific Science 2(1): 3-58, illus. Jan. 1948.

The collections reported upon were made in 1940 and 1941, mostly in southern and southwestern Alaska. Of 99 species collected, 45 were new records for Alaska. The polychaetous annelids now known from Alaska total 213. All of these are listed and their general distribution given. The species of the present collections are discussed in detail: some with descriptions, some with large, clear drawings. There is a list of about 125 references.

ROUNDWORMS

VAN CLEAVE, HARLEY J. An alphabetical index to the generic names of hosts of Acanthocephala of the world included in Anton Meyer's monograph. American Midland Naturalist 38(2): 417-426. Sept. 1947.

VEGETATION--COMMUNITIES

EGLER, FRANK E. Arid southeast Oahu vegetation, Hawaii. Ecological Monographs 17(4): 383-435, illus. Oct. 1947.

The author studied the area in 1937. He describes the vegetation in detail, and discusses the effects of grazing, fire, and soil erosion, and the interrelationships of forest scrub and grassland. The original vegetation of the lowlands and some of the vegetation of the mountains has been replaced by communities of introduced species. The environmental factor that affects the vegetation types most is precipitation; grazing is next. An example of the enormous changes undergone is presented by the flatlands near the ocean where an originally closed woody vegetation was probably destroyed by agriculture, fires, and pigs before 1400 A. D. This was followed by a scattered dustbowl vegetation; and this, under intensive grazing, by the development of a Prosopis forest. Leucaena is now invading Prosopis. On middle zone slopes there have been even more changes. The author believes that forests can be established again on once-forested watersheds, even within a generation or two. He believes, also, that with the control of cattle grazing vegetation and soil can be readily developed and soil and water conserved. There is a bibliography of about 70 references.

HOTCHKISS, NEIL, and STEWART, ROBERT E. Vegetation of the Patuxent Research Refuge, Maryland. American Midland Naturalist 38(1): 1-75, illus. July 1947.

This account of the plant communities and flora of a 2600-acre coastal plain area in central Maryland is based on observations made during the years 1936-1946. The greater part of the refuge is forested; although at one time most of the terrace and upland were in cultivation. The flood plain has largely remained forested. Variations in topography and soil water and in cultivation and logging have resulted in a diversity of plant communities. An annotated list of plants contains over 800 species. The study was made as a background for research on wildlife.

VEGETATION--COMMUNITIES--Continued

MARR, JOHN W. Ecology of the forest-tundra ecotone on the east coast of Hudson Bay. Ecological Monographs 18(1): 117-144, illus. Jan. 1948.
In 1939 the author studied the vegetation from the limit of trees at Richmond Gulf southward 80 miles to the Great Whale River. He found that tree growth was limited, locally, by lack of soil rather than by atmospheric factors. Dearth of soil was due to glaciation. As soils form, the current patchwork of spruce forest and tundra will tend to be replaced by more continuous forest, and the limit of trees will tend to move to the north. Large photos help to explain this situation.

VEGETATION--FLORAS & MANUALS
(See also VEGETATION --COMMUNITIES, Hotchkiss & Stewart; and VEGETATION--AQUATIC, McNeill)

ARSÈNE, BROTHER LOUIS. Plants new to the flora of the islands of Saint-Pierre et Miquelon. Rhodora 49 (586): 237-255. Oct. 1947.
This is a supplement to the flora of these islands south of Newfoundland that was published in Rhodora in 1927. 150 species are listed, with notes on their distribution. The recorded flora now comprises 515 native and 122 introduced species.

HULTÉN, ERIC. Flora of Alaska and Yukon. Parts I-VII. Lunds Universitets Arsskrift. N. F. Avd.2. Bd. 37-43. 1199 pages, illus. 1941-47.
This uncompleted flora describes the ferns to the umbellifers, inclusive. There are in these 7 parts more than 900 small range maps. References to literature and to localites appear to be as complete as possible under each species. Keys to species and occasional habitat and economic notes make the work useful and interesting.

JONES, GEORGE NEVILLE. An enumeration of Illinois Pteridophyta. American Midland Naturalist 38(1): 76-126. July 1947.
The author keys and describes 64 species, giving habitat and range in Illinois by counties. He lists 90 references.

POHL, RICHARD W. A taxonomic study on the grasses of Pennsylvania. American Midland Naturalist 38(3): 513-604, illus. Nov. 1947.
This annotated catalog of the grasses of Pennsylvania has keys and information on habitats, general ranges, and distribution within the State. The author has seen specimens of all of the 233 species. Two-thirds of the species are native, one-third introduced. There is a detailed, 4-page index.

SMITH, L. B., and others. Reports on the flora of Massachusetts. I-IV.
Rhodora 30(349): 12-19. Jan. 1928.
35(419): 351-359. Nov. 1933.
44(522): 213-220. June 1942
49(587): 257-277. Nov. 1947.
The first of these articles lists and gives habitat and distribution notes on the ferns; the second deals similarly with ferns, fern allies and conifers; the third with monocots from the cat-tails to Vallisneria; the fourth with the grasses from Bromus to Zizania.

VEGETATION--PROPAGATION

McATEE, W. L. Distribution of seeds by birds. American Midland Naturalist 38(1): 214-223. July 1947.

Birds carry seeds on their bodies, void or regurgitate seeds they have eaten, and transport seeds for storage. Some of this activity may be to man's advantage, some to his disadvantage; but this is not easy to determine. The author cites the crow as an important distributor of seeds; the red-cedar as a plant that owes much of its spread to birds. He lists 94 annotated references and has an index to the birds discussed in these references.

VEGETATION--FOREST
(See also VEGETATION--GRASSLAND, Munns)

BAILEY, REED W. Reducing runoff and siltation through forest and range management. Journal of Soil and Water Conservation 3(1): 24-26,31. Jan. 1948.

Examples are given from the East and from the West. In the West, snowmelt floods, prolonged rain floods, cloudburst floods, and summer debris-floods are each considered from the standpoint of cause and control.

FOSBURGH, P. W. 1/6th of the State. Part III. New York State Conservationist 2(4): 18-20. Feb.-Mar. 1948.

This article continues a discussion begun in the October-November 1947 issue. It shows how little profit has come to the land, or to individuals who have attempted to reclaim it. However, it assures those who are really interested that they can use the land wisely and enjoy a good life on it. Among the sources of help in planning and reconstruction are the county agent, district forester, district game manager, State College of Agriculture, and the U. S. Department of the Interior.

FOSBURGH, P. W. 1/6th of the State. Conclusion. New York State Conservationist 2(5): 21-23, illus. Apr.-May 1948.

This concludes a series of 4 articles that began in the October-November 1947 issue. New York's 5 million acres of abandoned land are a concern of everyone in the State. In Broome County a Rural Policy committee is making a study of the best use for its submarginal agricultural land--nearly half its total area. An overall plan for the State would require surveys and aid to private landowners in reforestation, woodland management, and wildlife management. Such a plan could be carried out if there were articulate public support for it and if there were plenty of money to finance it.

HAZARD, JOSEPH T. Our living forests; the story of their preservation and multiple use. 302 pages, illus. Superior Publishing Co., Seattle, 1948.

The author advocates the multiple use of forests. Wild life and game are one of 7 major fields of use. The book is an account of many years of outdoor experiences mostly in the Pacific northwest. These experiences are blended with facts and anecdotes into a fascinating picture of the forest as an environment for much of man's life. "The real future in forestry is in the production of an unending succession of young and growing forests following the harvesting and use of matured forests. This

VEGETATION--FOREST--Continued

is true conservation: To use, regrow, and use again. It is splendid policy to preserve, as long as tree life remains, museum tracts of old growth forest."

KITTREDGE, JOSEPH. Forest influences. 394 pages, illus. McGraw-Hill Book Co., New York. 1948. $4.50.

"Forest influences may be defined for most purposes as including all effects resulting from the presence of forest or brush upon climate, soil water, runoff, stream flow, floods, erosion, and soil productivity." Among the subjects discussed are climatic, soil, physiographic, and forest regions, vegetational factors, solar radiation and light, air temperature, wind, atmospheric moisture, precipitation, interception and stream flow, fog drip, evaporation and condensation, snow, soil evaporation, soil temperature, litter and forest floor, soil moisture, transpiration, runoff and stream flow, floods, erosion and erosion control, and watershed management. Beaver dams are one agent in erosion control. A separate chapter deals with vegetation for erosion control. There is a list of 381 references.

MUNNS, E. N. Forest hydrology in the Appalachians. Journal of Soil and Water Conservation 2(2): 71-76,112, illus. Apr.1947.

The author reviews the progress made during the past 50 years in improving water resources and investigating soil and water problems in this region. These investigations finally led to a concentration of studies on a single drainage, that of Coweeta Creek in southwestern North Carolina. Individual watersheds of 22 to 212 acres have been treated in a variety of ways. Two were cut clean; one was logged; one was cleared and farmed; livestock grazing was permitted on another; and so on. The results have been valuable in improving management practices.

MUNNS, E. N. Forests in soil and water conservation. Journal of Soil and Water Conservation 2(1): 28-30,56,58. Jan. 1947.

Forests intercept, but do not greatly affect the amount of, precipitation. They use water but reduce evaporation. They protect and enrich the soil. They retard radiation. Water resources are affected by timber cutting which favors dominance of one type of cover or another, logging practices, and grazing by livestock and big game. Foresters recognize the importance of forests in controlling erosion and conserving water; but they do not yet accept management as a positive agent in the control of soil and water.

ORDWAY, SAMUEL H., JR. Do we want to save Olympic National Primeval Park? Animal Kingdom 51(1): 2-7, illus. Jan.-Feb. 1948.

The author made observations in the Park in the summer of 1947. He concludes from them thatthe 56,000 acres proposed for transfer to the Forest Service is more valuable as a wilderness than for timber production. Cutting of timber would expose the Olympic elk to more intensive shooting.

VEGETATION--FOREST--Continued

WATTS, LYLE F. Watersheds and national forests. Transactions of the Twelfth North American Wildlife Conference. Pages 17-23. 1947.

Forested watersheds occupy a key position in the conservation of water and wildlife. Uncontrolled fires and logging and excess livestock and game decrease the water-holding capacity of watersheds and limit their continued use by wildlife. The Forest Service started watershed-management research in Colorado in 1909. Outstanding among many present-day experimental areas is the Coweeta Experimental Forest in North Carolina. The Forest Service has been successful in controlling fires on both federal and non-federal lands; and it is successfully practicing timber, range, and wildlife management on the National Forests.

WYCKOFF, STEPHEN N. California's watersheds. Journal of Forestry 46(2): 99-103. Feb. 1948.

California's watersheds produce timber, forage, and water. There are 7 major stream basins. In some basins the demand for water exceeds the supply; and already water is being moved from one basin to another. More conservation of water within watersheds is needed. To do this the forests and grasslands must be managed to prevent rapid runoff and erosion. Use of the mountains for recreation and timber and livestock production must be integrated for the sake of the industries themselves and to provide water for lowland farms and towns.

VEGETATION--BRUSHLAND

BLAKEY, HAROLD L. The role of brush control in habitat improvement on the Aransas National Wildlife Refuge. Transactions of the Twelfth North American Wildlife Conference. Pages 179-184. 1947.

In Texas it is estimated that 35 million acres of agricultural lands have gone from open prairie to brush in a few years. Both livestock grazing and wildlife use are affected adversely. Open brush range on the Aransas Refuge has a high carrying capacity for turkeys, white-tailed deer, quail, and other species. A roller-type brush cutter has immediately restored a high level of wildlife use to formerly dense brush, and has permitted practical livestock grazing within a year. Controlled burning has been the most effective and economical agent in keeping open brush in the desired stage. Burning and cutting favor panicums, paspalums, and legumes. The author describes the responses of different plants and animals to variations in treatment.

YOUNG, VERNON A. and PAYNE, GENE F. Utilization of "key" browse species in relation to proper grazing practices in cutover western white pine lands in northern Idaho. Journal of Forestry 46(1): 35-40. Jan. 1948.

Ceanothus sanguineus, Amelanchier alnifolia, Lonicera utahensis, and Rosa jonesii are the browse preferred by sheep in cutover and burned white pine lands in the Clearwater region. It has been rather common practice to use about 75% of the current growth each year; but clipping studies carried on from 1940 to 1946 indicated that grazing more than 60-65% suppresses these plants and leads to their replacement with plants of low palativility. Each species was clipped 50, 75, and 100%, spring, summer, and fall. Grazing studies on the same problem extended from 1939 to 1946.

VEGETATION--GRASSLAND
(See also VEGETATION--FOREST, Bailey, Wyckoff; and VEGETATION--BRUSHLAND, Blakey)

ALLRED, B. W. Viewpoints on conservation of grazing lands. Journal of Soil and Water Conservation 2(1): 21-27. Jan. 1947.
Grazing conditions are significantly different in the West, the Southeast, and the Northeast. About one-half of the food of domestic animals and the bulk of wildlife food comes from native forage. Range deterioration has been going on for a long time. An instance of local improvement is the northern Great Plains since the drought of the 1930's. Some problems that need study in connection with range improvement are (1) the role of artificial seeding, (2) the value of natural plant litter, (3) perfection of high-producing strains of forage plants, (4) coactions of animal life and grassland. There is need for a philosophy of grass and a diffusion of knowledge on grazing; and there is need for action.

CURTIS, JOHN T., and PARTCH, MAX L. Effect of fire on the competition between blue grass and certain prairie plants. The American Midland Naturalist 39(2): 437-443, illus. Mar. 1948.
From 1941 to 1946 annual and biennial burns were made in March, May, and October in a field of bluegrass at Madison, Wisconsin. In 6 years the blue grass sod was reduced to one-fifth its original density. With the increase in bare ground, weedy forbs increased. Of 6 species of prairie plants that had been artificially established, Brauneria purpurea was reduced in size and number; Baptisia leucantha showed no effect; and Eryngium yuccifolium, Andropogon furcatus, Solidago rigida, and Liatris aspera spread.

MUNNS, E. N. Hydrology of western ranges. Journal of Soil and Water Conservation 2(3): 139-144, illus. July 1947.
"Water is the West's most precious asset....." The author outlines the history of abuse of the land in the West from the early days to the period following the first world war. Finally, plots to measure runoff were established in the mountains of central Utah. The results of these studies and observations on the effects of cloudbursts led to elimination of grazing and to revegetation on watersheds. This work has been effective in controlling flash floods.

OSBORN, BEN. Determing range utilization by frequency tallies. Journal of Soil and Water Conservation 2(1): 51-55, illus. Jan. 1947.
The author describes a rapid method of determinging composition and degree of use of range vegetation. It may be used on both grassland and browse types. A random sample of individual plants is put into 3 use classes: fully grazed, partially grazed, and not grazed. "Composition is calculated as the percentage frequency of occurence of each species. Percentage of use for each species is computed as the total of the percentage of plants of that species fully grazed plus half the percentage partially grazed....." Advantages and disadvantages of the method are tabulated.

VEGETATION--CROP PLANTS

ISELY, DUANE. Lespedeza striata and L. stipulacea. Rhodora 50(590): 21-27, illus. Feb. 1948.

Through detailed descriptions, drawings, and photographs, the author distinguishes these closely related legumes. He gives an account of their introduction, distribution, and cultivated varieties. They are valuable for forage, in controlling erosion, and as food for quail.

TABOR, PAUL. Ten decades of annual lespedeza. Journal of Soil and Water Conservation 2(4): 187-190. Oct. 1947.

This is a history, decade by decade, of the introduction and spread of Lespedeza striata. In the decade 1936-1945 it became an important soil conserving and forage crop in central and southeastern United States. The author gives an example of its effectiveness on a farm in South Carolina. He cites 30 references.

VEGETATION--WILDLIFE PLANTS

DAVISON, VERNE E. Bobwhite foods get attention. Sports Afield 119(4): 46-47,112-116, illus. Apr. 1948.

Bicolor lespedeza is one of the best bobwhite foods and erosion-control shrubs. Since 1940 the Soil Conservation Service has been selecting superior strains and has been testing bicolor under all sorts of conditions. The author describes the results on several farms in the southeast, where it has finally become apparent that populations of bobwhite can be increased with more food. Much remains to be done with bicolor and other food plants.

OVERHOLSER, E. L., and MOORE, R. C. Apple trees for wildlife. Virginia Wildlife 8(10): 9-10, illus. Oct. 1947.

Apples are a favorite food of deer and upland game birds; so apple trees may be advantageously planted along woods borders or in forest clearings. Apple trees may be readily grown from seed. In Virginia, York Imperial seeds are more satisfactory than those of most other varieties. They must be handled carefully to insure good germination. Two-year-old trees are the best for transplanting; but allowance must be made for some destruction by mice, rabbits, or other mammals.

VEGETATION--DESERT

BILLINGS, W. D. The plant associations of the Carson Desert region, western Nevada. Butler University Botanical Studies 7:89-123, illus. Apr. 1945.

The author describes 15 associations. He considers the little greasewood-shadscale association to be the climatic climax. It occurs on lacustrine sediments and residual soils and covers more territory than any other association. Other soil types with characteristic vegetation are stabilized dune sands and saline clays. There are tabulations of the vegetative composition and the soils of several associations.

VEGETATION--AQUATIC

BAUMAN, ADEN C. The effects of ammonium sulfamate on emergent aquatic vegetation. Transactions of the Twelfth North American Wildlife Conference. Pages 346-354, illus. 1947.

Emergent plants may become a nuisance in water areas used for fish production. Ammonium sulfamate was sprayed on arrowhead, lotus, pondweeds, cat-tail, water primrose, water willow, duckweed, black willow, and sedges and grasses in Missouri. It killed black willow and water primrose and the emergent parts of arrowhead, water willow, sedges, and grasses. With the wetting agent Vatsol O S added, it killed cat-tail and lotus. At a concentration of one pound to one gallon of water, ammonium sulfamate apparently did not harm fish or the sheep and cattle that ate a large area of sprayed cat-tails.

CLAUSEN, ROBERT T. Najas muenscheri and other species of Najas in eastern Virginia. Rhodora 49 (585): 233-236. Sept. 1947.

The other species in the Virginian estuaries are gracillima and guadalupensis. They are important duck-food plants.

COTTAM, CLARENCE, and ADDY, C. E. Present eelgrass condition and problems on the Atlantic coast of North America. Transactions of the Twelfth North American Wildlfie Conference. Pages 387-397. 1947.

Before 1931 eelgrass (Zostera) was the dominant stabilizing influence in the biology of thousands of acres of brackish-water bays and estuaries along the northeast Atlantic coast. Its disappearance in 1931 and 1932 was particularly upsetting to wintering brant and to the scallop industry. During the past few years there has been sufficient recovery to benefit waterfowl and shellfish. The authors review its present condition in the Maritime Provinces, and state by state from Maine to North Carolina. In some areas eelgrass is spreading by natural reproduction. Experimental seeding and planting are aimed at accelerating its spread.

DAILY, FAY KENOYER. The Characeae of Indiana--a prelimary report. Butler University Botanical Studies 7: 124-131. Apr. 1945.

The author gives the distribution in Indiana of 2 species of Nitella and 11 species of Chara.

DAILY, FAY KENOYER. The Characeae of Nebraska. Butler University Botanical Studies 6: 149-171, illus. Aug. 1944.

A key, descriptions, and drawings help to identify 5 species of Nitella and 9 species of Chara. There is a list of 23 references.

DAILY, FAY KENOYER. Species of Tolypella in Nebraska. Butler University Botanical Studies 8: 113-117, illus. Oct. 1946.

This supplements the author's "The Characeae of Nebraska", published in Butler Univ. Bot. Stud. 6: 149-171, 1944. There is a key to the 3 genera of Characeae and one to the 3 species of Tolypella found in Nebraska. These species are described and illustrated with drawings.

VEGETATION--AQUATIC--Continued

JACOBS, DON L. Ecological life-history of Spirodela polyrhiza (greater duckweed) with emphasis on the turion phase. Ecological Monographs 17 (4): 437-469, illus. Oct. 1947.

Spirodela is most effectively distributed by water, muskrats, and water birds. Muskrats, waterfowl, carp, and many lower animals eat it. Most submerged aquatic plants cannot compete successfully with a blanket of duckweeds (greater bladderwort, ceratophyllum, and bluegreen algae are exceptions). Duckweeds cannot compete successfully with emergent aquatics. There are 6 species of duckweeds in Minnesota: Spirodela, Lemna minor, L. perpusilla, L. trisulca, Wolffia columbiana, and W. punctata. Spirodela is the only one of 25 species of duckweeds that overwinters in the north only by turions. In Minnesota, turions form from July on. They begin to germinate in May. Experimental tests on a pure-line clone indicated the conditions under which turions form, remain dormant, and germinate.

KIENER, WALTER. Notes on distribution and bio-ecology of Characeae in Nebraska. Butler University Botanical Studies 6: 131-148, illus. Aug. 1944.

A county map of Nebraska shows the distribution in 1944 of 5 species of Nitella and 9 species of Chara. Chara coronata grew mainly in intermittent pools, C. contraria in gravel-pit ponds, and C. fragilis and C. foetida in sand hill lakes. Waterfowl spread the Characeae. Chara mats are nurse beds for small aquatic animals, and some species are important duck foods.

McNEILL, ELLIS MEADE. A contribution to the knowledge of West Virginia algae. Castanea 13(1): 1-56, illus. Mar. 1948.

This annotated list of West Virginia algae has keys to 119 genera and 304 species. The author collected in a great variety of habitats each month in the year; and the list probably contains most of the common algae of the State.

PITNEY, WILLIAM E. Aquatic weed problem in Oregon. Oregon State Game Commission Bulletin 3(1): 1,7,8, illus. Jan. 1948.

Brazilian waterweed (Anacharis densa), parrot feather (Myriophyllum brasiliense), and some native plants recently have become serious pests in several, mostly coastal, Oregon lakes. Their growth is so rank that they threaten both recreational and industrial use of the waters. Sodium arsenite, 2,4-D, and chlorinated hydrocarbons applied late in the 1947 growing season appeared to have little effect on Brazilian waterweed; but it was killed by copper sulfate. Parrot feather was killed by 2,4-D. Experimental control must be carried on in the spring with a variety of chemicals. If there is a kill, decomposing vegetation will use up oxygen and probably cause fish loss.

REED, JOHN F. The relation of the Spartinetum glabrae near Beaufort, North Carolina, to certain edaphic factors. American Midland Naturalist 38(3): 605-614. Nov. 1947.

The author describes the Spartina alterniflora community which forms the marginal emergent vegetation on muddy, tidal, saline shores. The community, which consists of nearly pure Spartina, extends for a long distance up and down the Atlantic coast. The soil has a high percentage of chlorides and is poorly drained. Landward from the position normally

VEGETATION--AQUATIC--Continued

reached by high tides, this community is replaced by communities dominated by Spartina patens, Distichlis, or Salicornia. Aggradation of the Spartina alterniflora community helps to destroy it and replace it with the other communities. There is a list of 30 references.

LAND & SOILS
(See also VEGETATION--FOREST, Fosburgh)

ACKERMAN, EDWARD A. A symposium--the ecological approach to land use. Journal of Soil and Water Conservation 1(2): 63-66,76, illus. Oct. 1946.

A map shows the 5 principal agricultural land types of the world. The humid subtropics and the seasonally dry tropics have a major share in providing for people (China, Japan, India). Any possibility of ecological land use on these lands is remote. Ecological land use has been best worked out in the humid middle latitudes (eastern North America and western Europe). The earth's dry lands will in the future support less people than in the past, the rainy low latitudes more. But more cultivation in the rainy tropics carries with it problems of erosion and mineral depletion. Ecological land use should be a function of world government. Without world government ecological land use seems impossible.

ANDERSON, WALLACE L. Wet land--how should it be used? Transactions of the twelfth North American Wildlife Conference. Pages 425-429. 1947.
How this question is answered for a particular area should depend on 4 considerations: what the land is capable of producing, what the effect of drainage will be on adjacent lands, what is best for the public, and whether or not the land can be drained economically. Action based on facts so obtained will resolve the present conflicting views of sportsmen and farmers, and will result in the wise management of both drained and undrained wet lands.

BEAR, FIRMAN E. The real values of soil organic matter. Journal of Soil and Water Conservation 1(2): 81-84, 100. Oct. 1946.
The author concludes, among other things, that ".....The organic-matter problem is readily solved when rotation with a sod crop is practiced and lime and fertilizers are applied in liberal amounts.....Fresh green organic matter is of more value in a sandy soil than in a heavy one. Crude types of organic matter are of more value in a heavy soil than in a sandy one...."

DEETZ, CHARLES H. Cartography; a review and guide for the construction and use of maps and charts; Revised edition, 1943. U. S. D. C., Coast and Geodetic Survey, Special Publication No. 205 (Second edition), 85 pages, illus. 1943. $1.00 from Government Printing Office.
Six chapters deal, in turn, with "Historical and critical review, Classification and analysis, Compilation of material, Map projections, Elements of direction....., Techniques of construction." The author demonstrates the importance of maps and the diversity of their forms and uses. 30 illustrations are reproduced from photographs, maps, and sketches.

LAND & SOILS--Continued

FRASER, WILDER J. Profitable farming and life management. 2nd. ed. 421 pages, illus. The Interstate Printers and Publishers, Danville, Illinois. 1948.

This discussion of farming as a way of living comprises 3 parts: "Profitable production", "Rational consumption", and "Abundant living." Throughout the chapters dealing with production the author emphasizes repeatedly the need for raising the low, limiting factors.

HOPKINS, DONALD P. Chemicals, humus, and the soil: A simple presentation of contemporary knowledge and opinions about fertilizers, manures, and soil fertility. 358 pages, illustrated. Chemical Publishing Co., Brooklyn, 1948. $8.50.

"This book.....is written for the ordinary man who is interested one way or another in the care of the soil and the raising of crops....."

JACKSON, CHARLES E. More public knowledge--less high dams. Transactions of the Twelfth North American Wildlife Conference. Pages 89-98. 1947.

"Every one of the high-dam projects should be reconsidered. There should be a careful analysis of the losses as well as the gains that may be derived from river valley projects."

McCALLA, T. M. The biology of soil structure. Journal of Soil and Water Conservation 1(2): 71-75,100, illus. Oct. 1946.

Many types of organic matter help to stabilize soil granules. Soil structure affects soil moisture, microbial activity, the conservation of organic matter, and the growth of plants. A deterioration of soil structure leads to replacement of aerobic by anaerobic activity, and consequent reduction of nutrients to unavailable forms. "A desirable soil structure can be maintained by following a rotation including a sod crop, and frequent liberal use of manures and crop residues."

TAYLOR, E. H. "Our Changing Land Policy". Journal of Soil and Water Conservation 3(1): 5-12,56, illus. Jan. 1948.

We have never had a genuine land policy; and there is not yet a land policy to which we are changing. It is imperative that we have one. The author outlines the history of the use of land in the United States. He blames the Government for the land's exploitation.

TRYON, E. H. Effect of charcoal on certain physical, chemical, and biological properties of forest soils. Ecological Monographs 18(1): 81-115, illus. Jan. 1948.

Charcoal occurs in the soils of all forest types of the United States. The author found by experiments that charcoal altered several physical and chemical properties of soils. But he concluded that the usual amounts found in forest soils are not ecologically important. There is a list of about 70 references.

WATER

REID, KENNETH A. Economics and human psychology in water pollution. Transactions of the Twelfth North American Wildlife Conference. Pages 146-152. 1947.

The author reviews a 25-year struggle to control water pollution. Pollution now appears to be worse than ever; and the only possibility for its abatement is through Federal legislation.

REID, KENNETH A. This thing called flood control. Outdoor America 12(11): 3-5, illus. Dec. 1947.

Floods are a part of nature, but they have been increased by misuse of the land. Wiser than continuing to farm some flood plains would be retiring them from human occupancy. The first step in controlling floods is conservation farming and the building of headwaters dams. Many road and railroad fills could be turned into dams.

CLIMATE & WEATHER

THORNTHWAITE, C. W. An approach toward a rational classification of climate. Geographical Review 38(1): 55-94, illus. Jan. 1948.

In this article the author determines climatic boundaries by comparing precipitation and evapotranspiration; while in his "The climates of North America according to a new classification", published in Geographical Review 21: 633-655, 1931, boundaries are based in part on differences in vegetation, soils, etc. Each makes use of a moisture factor, a heat factor, and the seasonal variation of the two. Colored maps of the United States show moisture regions, seasonal variation of effective moisture, and annual and summer thermal efficiency. "This classification can be improved .....a truly rational method of delimiting the temperature-efficiency regions has not yet been developed."

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